

## Specification Section Supplement

**The following supplemental requirements are in addition to language contained in contract solicitations and are equally binding.**

### 1 General System Requirements

1.1 Security. Data must be secured between the tracking unit and the AFF NOC. A minimum of 128 bit Secure Socket Layer will be used between the vendor NOC and the AFF NOC.

The vendor NOC shall have an executed Interconnect Security Agreement (ISA) (See Exhibit 1) between the vendor NOC and the Government.

1.2: Quality. Only valid 3D position reports will be used for tracking. Reports with DOPs less than 1 or greater than 98 will be deemed invalid.

1.3: Latency. Position reports must be delivered to the AFF NOC in less than 5 minutes of the position report time.

1.4: Frequency. Tracking unit will report a minimum of one position every two minutes.

1.5: System Health Validation. Two sources of validation data are required (referred to as “heartbeat”).

1) One computer generated position report every 5 minutes to verify the query is retrieving current data from the production data server. This report may be substituted by using the rptTime attribute in the root data element.

2) One end-to-end position report is required from a tracking unit using the same hardware and satellite segment as production tracking units every 5 to 10 minutes to verify that the system is working from end-to-end. New firmware may be tested using the end-to-end unit. 2D positions are acceptable for end-to-end “heartbeat” position reports.

1.6: Consistency. The number of lost/invalid position reports must not exceed .02% on a 7 day running average.

1.7 Scheduled and unscheduled changes and outages. AFF will be notified of system changes, scheduled maintenance and planned or unplanned service outages via Boise Help Desk @ (800) 253-5559 or

(208) 387-5290, or the feedback form on the government's AFF website at <https://www.aff.gov>.

## **2 Data Types and Precision for Aircraft Tracking Units**

This specification section addresses minimum requirements of an individual position report.

The tracking unit must generate all data specified below and all data except ESN (Equipment Serial Number) must be calculated by GPS. Data units may be reformatted at the vendor NOC before delivery to AFF NOC (e.g. Latitude / Longitude may be transmitted from tracking units in Degrees Minutes and Seconds to the vendor NOC, then reformatted to decimal degrees for delivery to AFF NOC).

2.1 (Equipment Serial Number) will be embedded in the position report by the tracking device. No lookup or pivot tables shall be used for this value when generating XML tag.

2.2 Date/Time will be the UTC time of the GPS position report.

2.3 Latitude\* and Longitude\* will be decimal degrees.

2.4 Altitude\* will be Meters from Mean Sea Level.

2.5 Speed\* will be Meters Per Second.

2.6 Heading\* will be track over ground from True North reported in degrees.

\* Position data coordinate system will be Geodetic Latitude / Longitude, WGS 1984 datum. GPS and position report must be capable of reporting its position to with +/- 100 Meters.

2.7 Fix Type calculated by the GPS unit. Valid values are:

- 3D
- 2D
- Invalid

2.8 Position Quality metrics can be any of the following combination of precision:

- Position Dilution of Precision (PDOP)
- Horizontal Dilution of Precision (HDOP)

## 2.9 Table of data types and precision

Description	Data Type
Equipment Serial Number	String
Date Time	DateTime
Latitude	Double
Longitude	Double
Speed	Integer
Heading	Integer
Altitude	Integer
Fix Type	String
PDOP	Integer
HDOP	Integer

Real values may be rounded to create an Integer Value Type.

## **3 Data Storage, Delivery Method, Frequency**

This specification section addresses minimum requirements for the vendor's data center. (NOC)

3.1 Storage. Data will be stored at the vendor NOC for a minimum of 14 days.

3.2 Delivery Method. HTTPS will be used for data exchange. The request page will be username and password protected. Post method will be used to request data.

3.3 Frequency. The AFF server will request data no more frequently than every 30 seconds.

3.4 Data Format. Data will be formatted into a well-formed XML document as defined in Exhibit 2. (Sample Query, Position Report, and Error XML document is in Exhibit 3.)

3.5 Bandwidth. The vendor NOC must be able to deliver all position data over a 60 second interval in less than 30 seconds from time of request. AFF NOC will have three to six servers requesting position reports. AFF NOC data requests will not be synchronized.

3.6 Vendor NOC must be operational 99.99% on a 7 day running average.

## Definitions

NOC – Network Operations  
Center(s)

DOP - Dilution of Precision

SSL – Secure Socket Layer

HTTPS – Hypertext Transfer  
Protocol Secure

2D – Two-dimensional position  
report

ESN – Equipment Serial Number

3D – Three-dimensional position  
report

WGS = World Geodetic System

IMEI – International Mobil  
Equipment Identity

UTC – Universal Time Coordinate

XML – Extensible Mark-up  
Language (as defined by the W3  
Consortium)

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